

LoadRunner™ Series

OnBoard Weighing System for Roll Off Trucks

Installation & Service Manual



Content

Introduction.....	1
Safety	1
1.0 Considerations Before Installation	2
1.1 Welding Specifications	2
2.0 Load Pin and Transducer Specification	3
2.1 Onboard Roll Off Kit Parts	3
2.2 Load Pins	4
2.3 Pressure Transducer	5
2.4 Roll Off Collar	5
3.0 Roll Off Load Pin Installation	6
3.1 Installing the Load Pins	6
3.2 Installing the Inclinator	9
3.3 Power Cable Connection to Battery	10
3.4 Hydraulic Pressure Transducer	10
3.5 Routing Wiring	11
3.6 Install the Indicator	12
3.6.1 Electrical Wiring and Data Connections	13
3.7 Final Installation	13
4.0 Configuration and Calibration	14
4.1 User and Setup Menu	14
4.2 Initial Setup of the OB-350 Indicator	15
4.2.1 Initial Password Entry and Clock Setup	16
4.2.2 Configuration of Input Channels	16
4.3 Configuration of Count By	17
4.4 Configuration of Zero Function	17
4.5 Configuration of Inclinator Calibration	17
4.6 Configuration of Modes	18
4.7 Calibration	18
4.7.1 Calculating the SPAN (Net Weight)	18
4.7.2 Enter Tare Weight	19
4.7.3 Set Zero Calibration	19
4.7.4 Full Span (Net Load) Calibration	20
5.0 Service and Troubleshooting	21
5.1 System Maintenance	21
5.2 Calibration	21
5.3 Sensor Maintenance	21
5.3.1 Load Pins	21
5.3.2 Visual Inspection	21
5.4 Cables and Connectors	22
5.4.1 Cables	22
5.4.2 Connections	22
Hardware Warranty Statement	23



Technical training seminars are available through Rice Lake Weighing Systems. Course descriptions and dates can be viewed at www.ricelake.com/training or obtained by calling 715-234-9171 and asking for the training department.



Rice Lake continually offers web-based video training on a growing selection of product-related topics at no cost. Visit www.ricelake.com/webinars.

Introduction

This manual is intended for use by technicians responsible for installing and servicing LoadRunner Series Onboard Weighing Systems.

This manual contains instructions for installing various types of Onboard Weighing Systems (non Legal-for-Trade systems). For straight trucks, this manual includes rigid under-body mounting instructions in four and six point configurations, as well as under-body load pin installation instructions for tipping bodies and hoist chassis. Tipping body installations can be either Lift-to-Weigh or Live-Weigh system types.



Authorized distributors and their employees can view or download this manual from the Rice Lake Weighing Systems distributor site at www.ricelake.com.

Safety

Safety Symbol Definitions:



Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.



Indicates a potentially hazardous situation that, if not avoided, could result in serious injury or death, and includes hazards that are exposed when guards are removed.



Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.



Indicates information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.

General Safety



Do not operate or work on this equipment unless you have read and understand the instructions and warnings in this manual. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Rice Lake Weighing Systems dealer for replacement manuals. Proper care is your responsibility.



Failure to heed may result in serious injury or death.

DO NOT allow minors (children) or inexperienced persons to operate this unit.

DO NOT operate without all shields and guards in place.

DO NOT jump on the scale.

DO NOT use for purposes other than weight taking.

DO NOT place fingers into slots or possible pinch points.

DO NOT use any load bearing component that is worn beyond 5% of the original dimension.

DO NOT use this product if any of the components are cracked.

DO NOT exceed the rated load limit of the unit.

DO NOT make alterations or modifications to the unit.

DO NOT remove or obscure warning labels.

Keep hands, feet and loose clothing away from moving parts.

1.0 Considerations Before Installation



WARNING Failure to observe these recommendations and instructions could result in a hazardous operating condition.

This manual is intended to provide information for the mounting of Onboard Weighing Systems sensors in a variety of applications. In applying the installation procedures, which follow, some fundamental precautions and recommendations must be observed by the installer:

- Rice Lake Weighing Systems' Onboard Scales are designed for applications covering a broad range of vehicle types. Things to take into consideration are:
 - Significant variations in mountings
 - Variations in load sensor models
 - Specifications
 - System configurations
- Installation procedures are similar for both new vehicle mountings and retro-fit mountings. When doing a retro-fit mounting, ensure that all vehicle structures are free from cracks, excessive wear, corrosion, alignment problems, etc. that could affect safety and scale performance.
- Load cells, load cell bearing plates, mounting brackets and load cell hardware should be painted upon installation to help protect the installation from corrosion. Industry appropriate, quality enamel paint is recommended.
 - For environments where high concentrations of salts are used on road surfaces, under-body coating is recommended (3M™ Underseal™ part number 3M-8883 Universal Rubberized Undercoating).
 - Load cells, bearing plates, brackets and hardware should be periodically inspected for any evidence of rust or corrosion. If areas of corrosion are present, they should be cleaned with a wire brush and re-painted or undercoated.
 - Load cell connectors must be connected or capped during painting or undercoating.
- The instructions outlined herein are designed to ensure that a correct installation will provide maximum safety, optimum system performance and accuracy, a long operating life, and reasonable installation costs. It is required that the installer comply with all guidelines and material specifications outlined in this manual, with special emphasis on detail and inspection of work.
- Installation must comply with appropriate regulations of the U.S. Department of Transportation (DOT), state and local regulations, the recommended standards and practices of the Society of Automotive Engineers (SAE), standards of the American Welding Society (AWS), and the recommendations of the truck, trailer and body, hoist and/or suspension manufacturer.

1.1 Welding Specifications

Welding, metalworking and assembly should only be performed by qualified personnel experienced in welding on vehicle body structures and sub frames. Only welding equipment of the highest quality should be used in the welding of load cell bearing plates. When welding, use procedures that ensure high quality welds. Over-welding may result in distortion and damage, while under welding may not develop adequate strength.



Important Rice Lake Weighing Systems recommends removal of load cell after tack welding bearing plates in position so that final welding is performed without load cell being subjected to excessive heat, weld current, or cable damage.

If welding with load cells in position, the installer must ensure that electrical current cannot flow through the load cell. All load cell terminals must be shorted together. Attach the ground strap directly to the vehicle frame member to which the bearing plates will be welded. Never weld directly to a load cell.



WARNING Always disconnect battery terminals before performing any welding.

2.0 Load Pin and Transducer Specification

The Rice Lake Roll Off and Dump Truck kits are typically LIFT-TO-WEIGH KITS. This means that with the hoist in the relaxed state (on the chassis), no weight reading is available. The hoist needs to be elevated to a position showing the correct angle on the in-cab digital display unit, approximately 4 degrees, for the weight reading degrees to be valid and accurate.

2.1 Onboard Roll Off Kit Parts

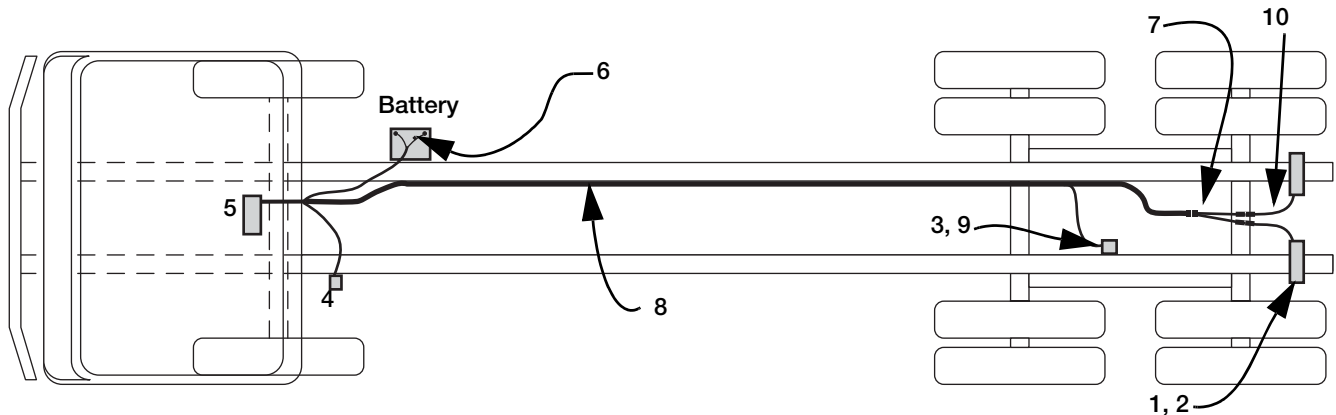


Figure 2-1. Onboard System – Roll-Off Kit Illustration

Item No.	Part No.	Description	Qty
1	131204	Pin, Load Roll Off	2
2	153104	Assy, Roll Off Kit	1
	153098	Ring, Roll Off 4 OD x	2
	153116	Nut, Top Lock 1/2-20 NF	2
	153117	Screw, Cap 1/2-20NF x 5"	2
3	131222	Inclinometer, Onboard	1
4	131200	Transducer, Hydraulic	1
5	131219	Indicator, OB3502 Channel	1
6	131221	Cable Assembly Fuse	1
7	131226	Splitter, Cable Y-Splitter	1
8	131228	Cable Assembly 15' (5M)	1
9	158196	Bracket, Onboard Inclinometer	1
10	131800	Cable Assembly 6'	3

Table 2-1. Onboard System – Roll-Off Kit Parts List

2.2 Load Pins

Hinge pivot and lift cylinder load pins built by Rice Lake Weighing Systems are available in two sizes:

- 2 inch diameter (see Figure 2-2) Dump Truck
- 2.5 inch diameter (see Figure 2-3) Roll Off

Full length hinge bars are also available as direct replacements for tipping bodies with hinge bars (contact a Rice Lake Weighing Systems dealer or the factory). All load pins are supplied with collars and bolts with locknuts to secure pin position. The installer must ensure that all load pin installations can receive required initial and periodic lubrication.

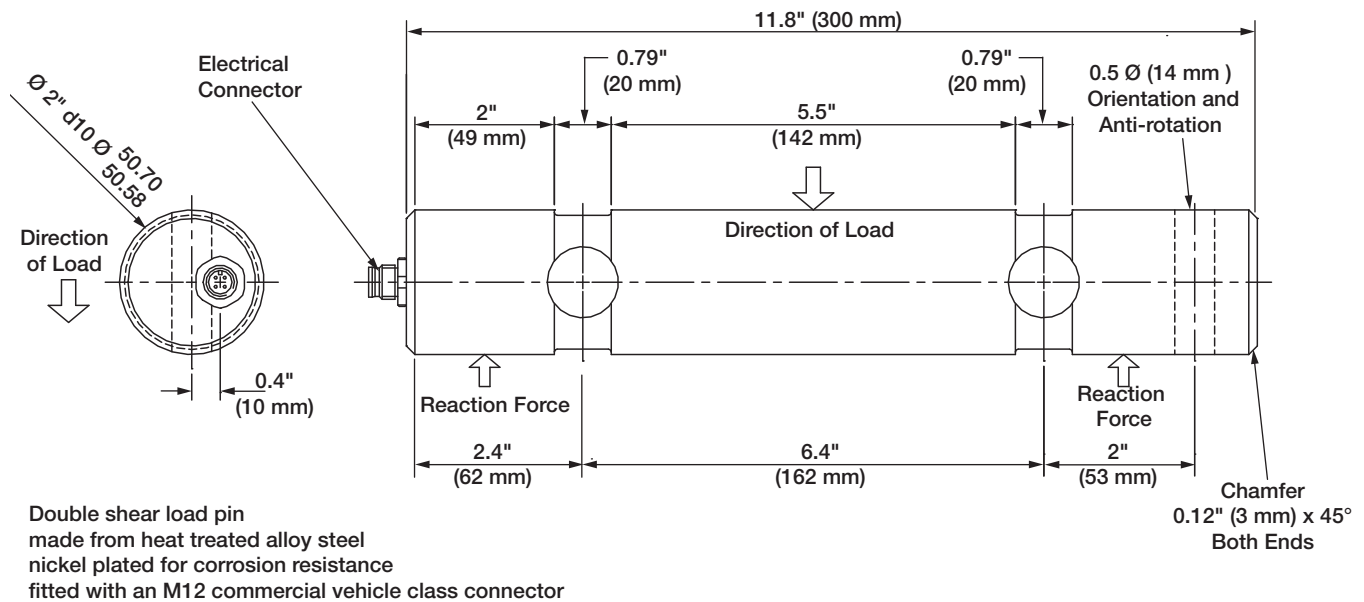


Figure 2-2. 2 Inch Diameter Load Pin (PN 131207)

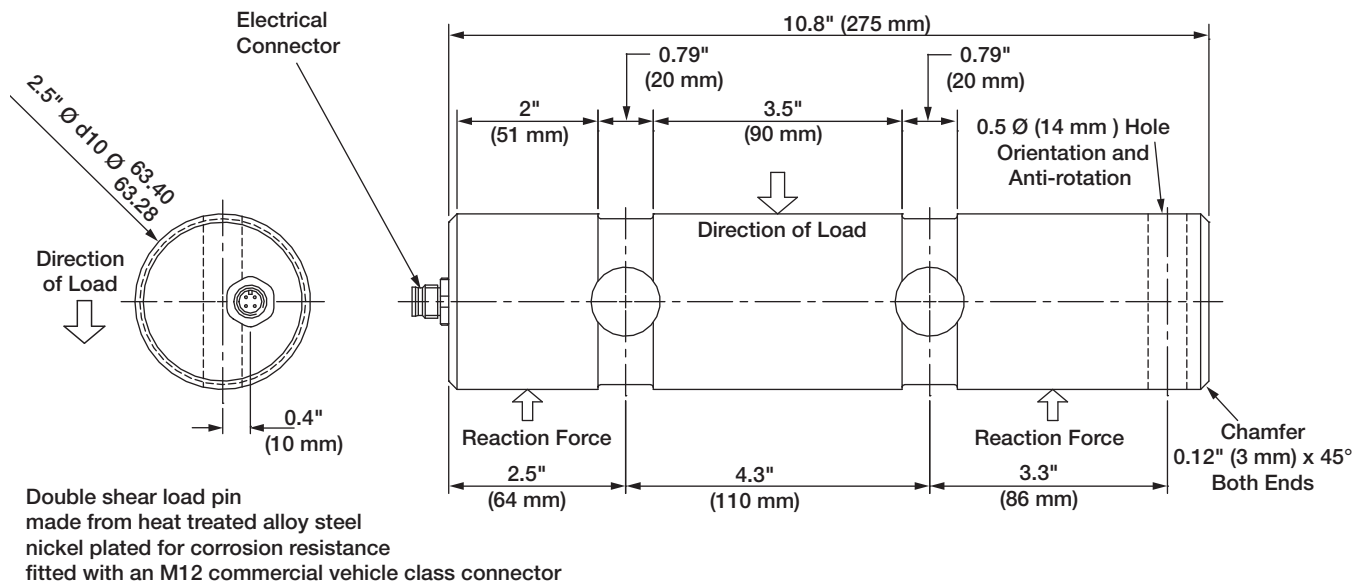


Figure 2-3. 2.5 Inch Diameter Load Pin (PN 131204)

2.3 Pressure Transducer

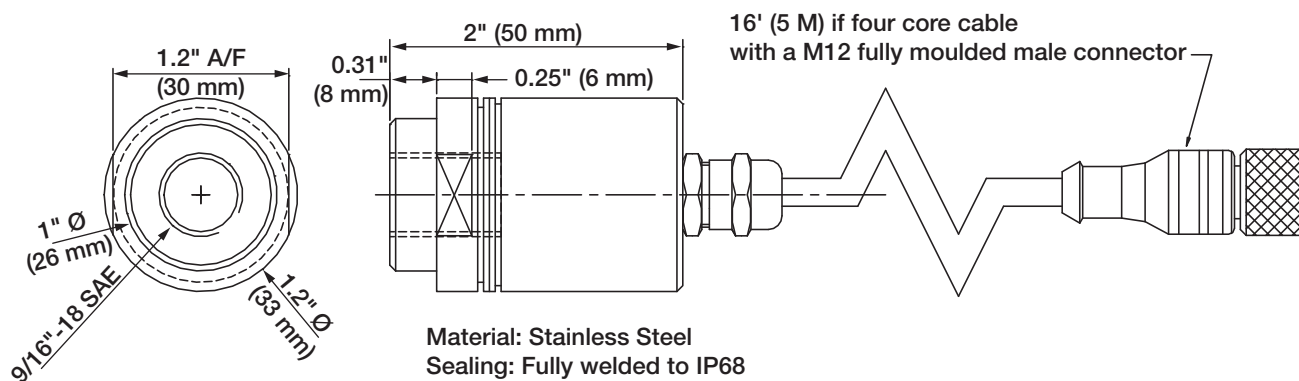


Figure 2-4. Oil Pressure Transducer (PN 131211)

2.4 Roll Off Collar

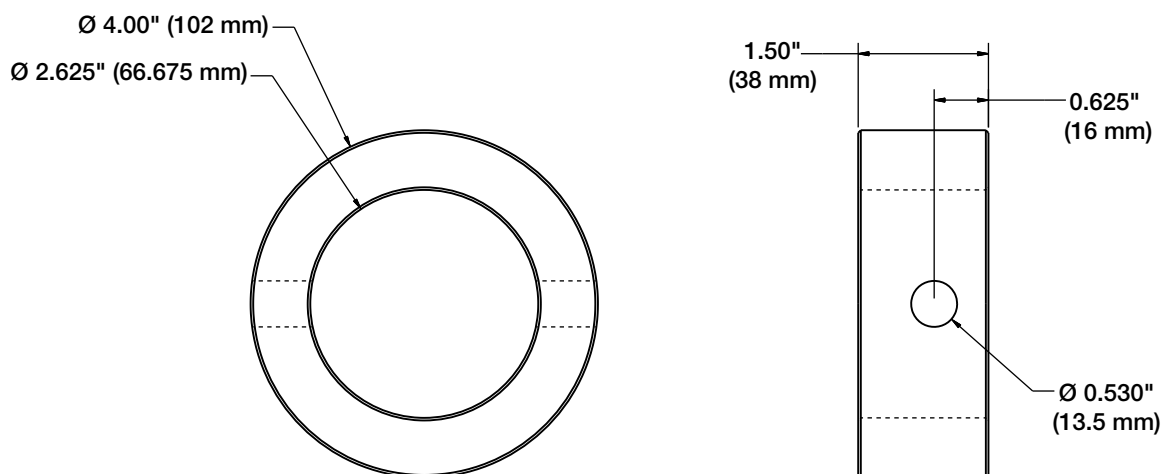


Figure 2-5. Roll Off Collar (PN 153098)

3.0 Roll Off Load Pin Installation

Load pins supplied are custom sized to fit the specific hinge and ram brackets of the vehicle. The *LoadRunner* Roll Off system is compatible with Galbreath, Accurate and Ruddco. Installation requires removal of existing pins, and replacements of these pins with Rice Lake load pins and collars.



Important

All load pin installations require lubrication facilities. Normally lubrication is provided through the central pivot area. OEM Roll Off pivots typically have existing lubrication fittings included in their pivots. Rice Lake pivots are furnished with drilled and tapped holes for the insertion of a standard lube zirk which must be supplied and installed by the system installer.

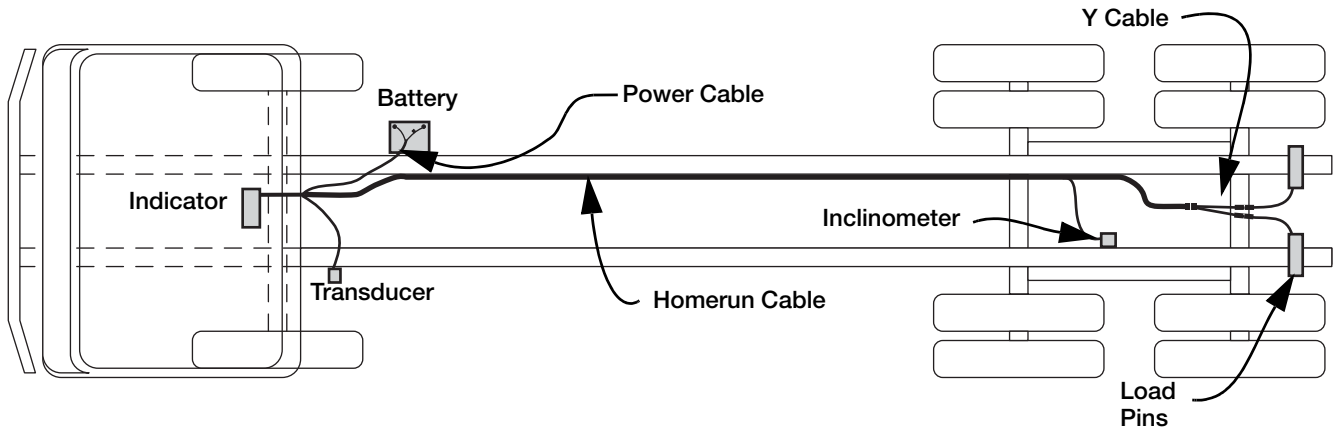


Figure 3-1. LoadRunner System Layout

3.1 Installing the Load Pins

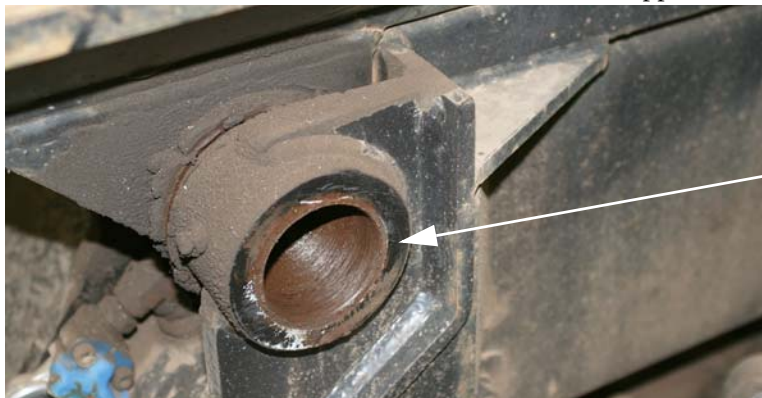
1. Remove the rear fenders from the truck, if required, to gain free and clear access to the pivots.
2. Use jacks or a forklift to support the rear of the hoist chassis and maintain its position/alignment while the pivot pins are being replaced.
3. Remove the bolt and washer from the outer collar on the pivot.



Note

Removing pivot pins on some vehicles may be difficult if rust is present or if the hoist chassis pivot and the truck chassis supports are out of alignment. If rust is an issue, use a penetrating lubricant and appropriate tools for tapping the pivot pin out. Use a pry bar as a lever to assist with any misalignment problems to remove the existing pivot pins.

4. Push the pivot pins into the frame and out the other side, removing the inside collar as well.
5. Remove the outer collar if still attached to the frame.
6. Using a power grinder or a wire brush, clean around the hole where the pivot was located, both sides of the frame.
7. Grind the frame smooth to ensure a clean weld at load cell installation.
8. Remove any debris that is inside and around the holes of the chassis supports and the pivots.

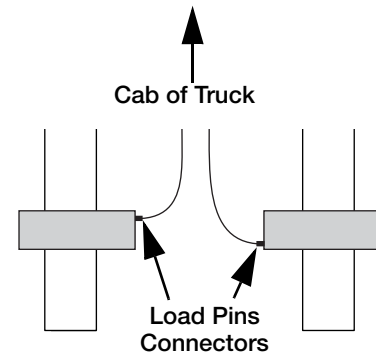


Remove existing pin and prepare surface for load pin installation

Figure 3-2. Remove Existing Pin

9. Using grease, lubricate the hole and insert the load pin into the frame ensuring the strain gauge seals are facing toward the front of the truck. The load pins have arrows indicating the downward force, or direction of load applied to register a positive weight value.

The load pin should extrude from the outside of the frame 4 inches.



Left Rear – Connector should face toward cab.

Right Rear – Connector should face away from cab

Figure 3-3. Install Load Pin



Note See Figure 2-2 and 2-3 for load pin specifications and load direction.

10. To install the collar kit, place collar on the load pin aligning the holes and secure with bolt. Pin should go in from the top and be vertical. Use a small square to ensure the bolt is precisely vertical.



Figure 3-4. Install Collar and Bolt

11. Tack weld the collar to the frame to hold in place.



Important DO NOT overheat the load pin when tack welding. This may damage the load pin. Do not exceed 140° F.

12. Remove the load pin from the frame.



Important Load pin should be easily removed by hand. If not, use a wood block (or similar material) to cushion the load pin, and tap lightly to remove.
Do NOT strike the load pin directly, it may cause damage to the load pin.

13. Skip-weld the collar to frame with four welds of 1 inch each, is adequate. However if the installer prefers, the entire collar can be welded in place. Allow collar to cool before proceeding to next step. Ensure there are no weld remnants inside the collar or pivots. Remove any such residuals.



Note Leave access to easily install the bolt and nut that secures the load cell.

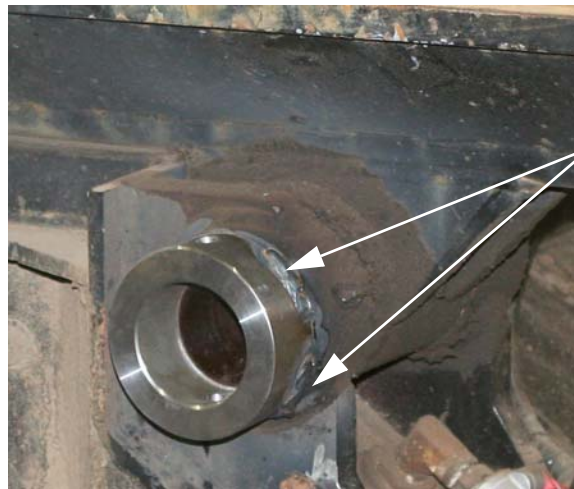


Figure 3-5. Skip Weld Collar to Frame

14. Apply grease to each center pivot using existing lubrication points.
15. Reinstall the load pin, lining up the bolt hole with the hole in the collar.



Important

Do NOT strike the load cell directly, as it may cause damage to the load cell. Use a wood block (or similar material) to cushion the load cell, and tap lightly. If the load pin does not go in by hand, or with moderate tapping, the holes need to be aligned better, or opened up with a grinder.

16. Insert bolt through the top of the collar and secure with nut at the bottom.

1/2-20 x 5"
Screw

Load Pin

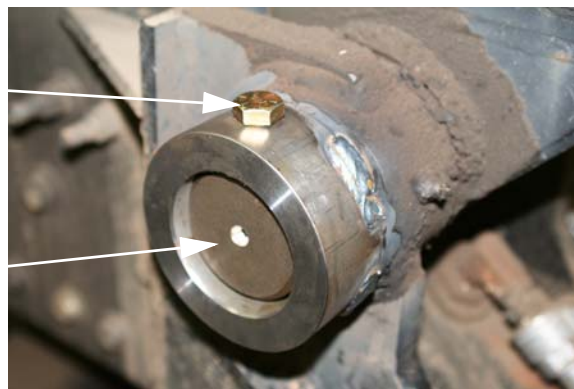


Figure 3-6. Insert Load Pin

17. Repeat steps 3 through 16 for the other side of truck.

3.2 Installing the Inclinometer

Inclinometer should be installed on the hoist as close as possible to the load pins. Grind off any paint or rough areas of the frame.



Important

The inclinometer should be installed on a flat surface that will not interfere with any moving parts on the frame. It must be installed as level to the frame as possible.

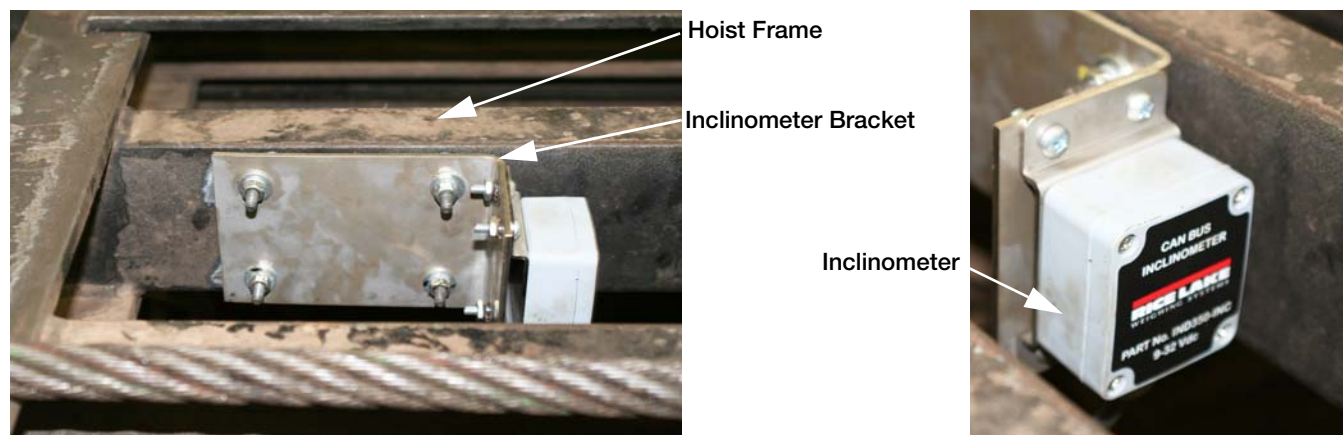


Figure 3-7. Install Inclinometer



Note *Rice Lake Weighing Systems recommends one of the following mounting options, dependant on the type of truck frame the unit is being mounted to.*

Mounting Bracket Option 1

1. Align the mounting bracket to the frame and mark the holes.
2. Set the bracket aside and drill holes in the frame where marked.
3. Align the bracket with the holes and secure with bolts, washer and nuts.

Mounting Bracket Option 2

1. Align the mounting bracket to the frame and mark the holes.
2. Weld mounting studs to the frame where marked.
3. Place the bracket on the mounting studs and secure with washers and nuts.

Mounting Bracket Option 3

1. Align the mounting bracket to be level with the frame.
2. Weld around the bracket to secure to frame.

Installing Inclinometer

1. Install the inclinometer to the bracket using the hardware included. The cable connection should be at the bottom.

3.3 Power Cable Connection to Battery



Figure 3-8. Power Connection to Battery

1. Wire the fuse (5A) to the brown wire.
2. Connect the power cable to the battery.
 - Brown wire connects to positive terminal.
 - Blue wire connects to ground.

3.4 Hydraulic Pressure Transducer

The hydraulic pressure transducer should be installed at the hydraulic control valve.

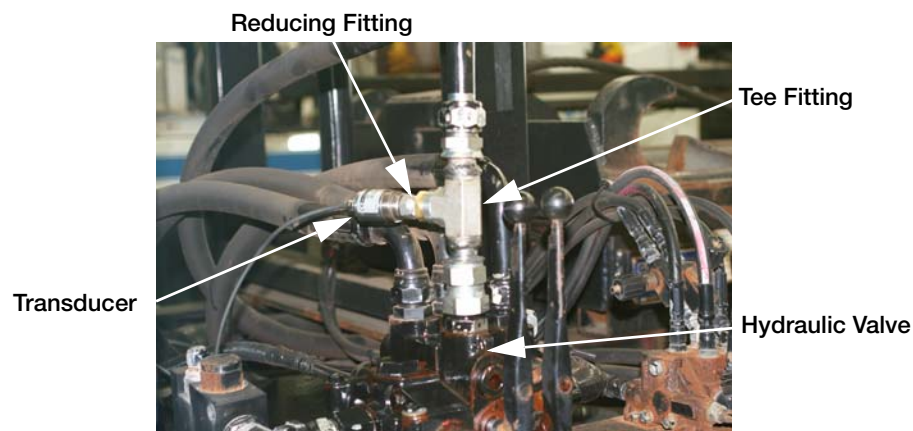


Figure 3-9. Install Hydraulic Pressure Transducer

1. Remove the hose where the transducer is to be installed.
2. Install a tee fitting to connect the hose to the hydraulic valve.
3. Insert a reducer if required (9/16" straight thread with O-ring is required to fit the Rice Lake pressure transducer) to the opening in the tee where the transducer is to be installed.
4. Run the cable along the frame to the cable access hole in the cab. Wire-tie the cable to the frame.



Note Allow for slack when fitting and securing hydraulic hose lines as these move during normal operation.



Important Plan a transducer cabling route that has little or no risk of pinching, stretching or melting the cables. Use split loom on all exposed cable to protect in areas where damage could be an issue.

3.5 Routing Wiring

Because each truck is different, cable routing will be specific to the truck the system will be installed on.



Important

Plan a route that has little or no risk of pinching, stretching or melting the cables.

Use split loom on all exposed cable to protect in areas where damage could be an issue.

Wire tie any excess cable to the frame.



Note

For cab-over type truck cabs, all scale system cabling must run around the main pivot point of the cab-over hinge. For conventional cabs, look for cab access grommets in the flooring near the driver seat area.

For ease of connection, label the cables used in installation prior to threading through the hole into the cab.

1. Connect 6' cables to the load pins.
2. Connect the load pin cables to the Y cable.
3. Connect 15' cable and 3' cable (if necessary) to the Y cable.
4. Route the 15' cable along frame to the indicator through access hole in the cab.
5. Wire tie the cable to the frame approximately every 18 inches.
6. Follow the same route with the inclinometer cable.
7. Route the power cable from the battery to the indicator location.



Note

Connecting wiring to the indicator is shown in Section 3.6.

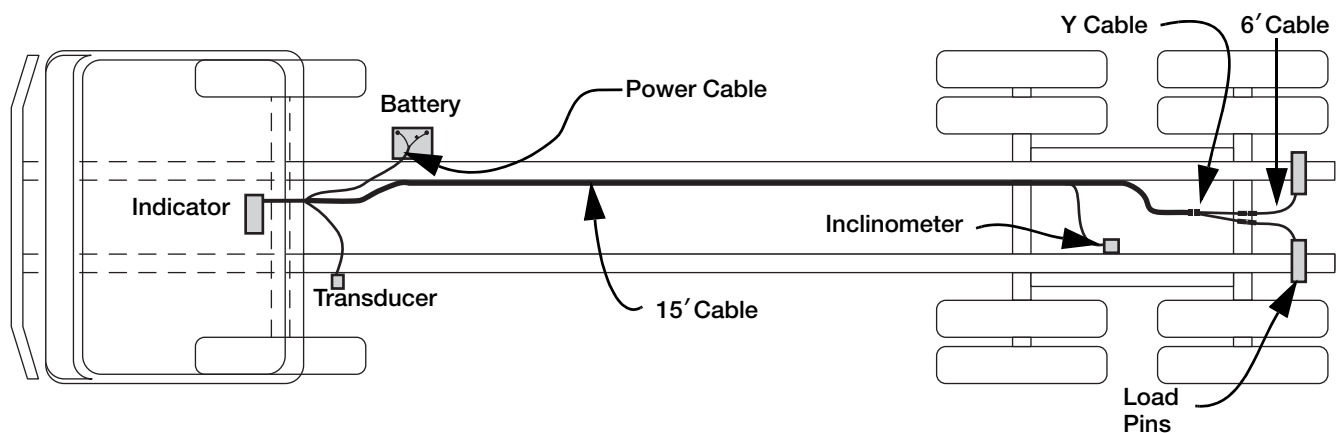


Figure 3-10. Wiring Diagram

3.6 Install the Indicator

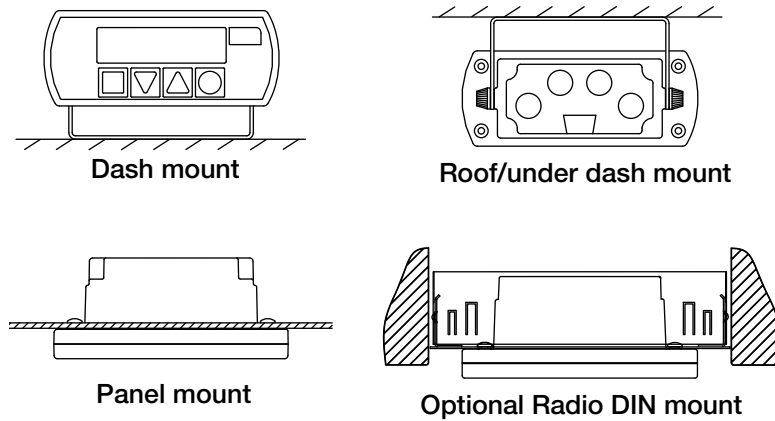


Figure 3-11. Indicator Mounting Options

If the indicator will be installed in the cab, choose an area that is easily visible to the driver. A mounting bracket is provided.



Important

When running cable to the indicator, use existing access hole if available, if not, a hole will need to be drilled in the cab. Insert a grommet to protect wiring.

Do not allow cable jacket to contact bare metal edges.

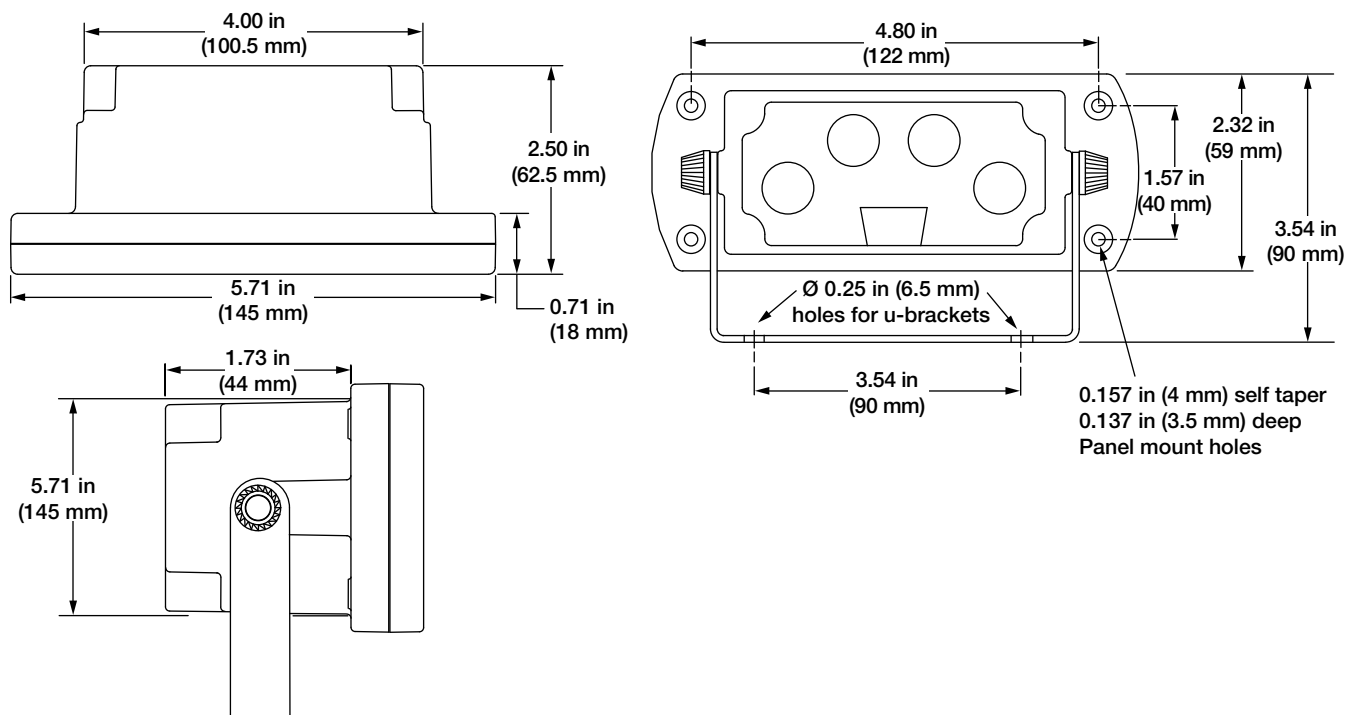


Figure 3-12. Indicator Dimensions

3.6.1 Electrical Wiring and Data Connections

The indicator is fitted with one Power and one Input Channel connector as standard. CANbus, Channel 2 and RS-232 are optional. Full connector options are shown below.



Figure 3-13. Rear Panel Identification and Bulkhead Connectors

1	Input Channel 1, Max +/-39.0625 milli-Volts (Hydraulic Pressure Transducer)
2	Input Channel 2, Max +/-39.0625 milli-Volts (Load Pin Connection)
3	Power Input
4	CANbus digital input & output (Inclinometer Connection)
5	RS-232 output for printers and data capture devices (pin 9 = vehicle volts, pin 5 = ground, pin 2 transmit, pin 3 = receive)
6	Alpha-numeric unique indicator serial number, also appears on power-on

POWER & ALARM, socket is MALE – CON 1 on PCB

Pin 1	BROWN	Vehicle voltage	Supply 12V (LCV) or 24V (MCV & HGV)
Pin 2	WHITE	Output 1	12V or 24V
Pin 3	BLUE	Ground	Ground 0 Volts (common)
Pin 4	BLACK	Output 2	12V or 24V

3.7 Final Installation

1. Reinstall the fenders.
2. Test the hoist to make sure none of the cables at risk of being pinched, stretched or cut when it is raised and lowered.
3. Test the hoist to make sure the scale reads positively with applied weight. If positive weight is not displayed, it is possible that the load pins or a load pin are not in the correct position and reading backwards. Pin position can be changed by rotating 180 degrees.

4.0 Configuration and Calibration

4.1 User and Setup Menu

The menu structure has two levels of security: an open user menu for driver operators and a password setup menu for calibrations and options for making changes to the user menu.



Note The default password is 0350. Keep this for your records.

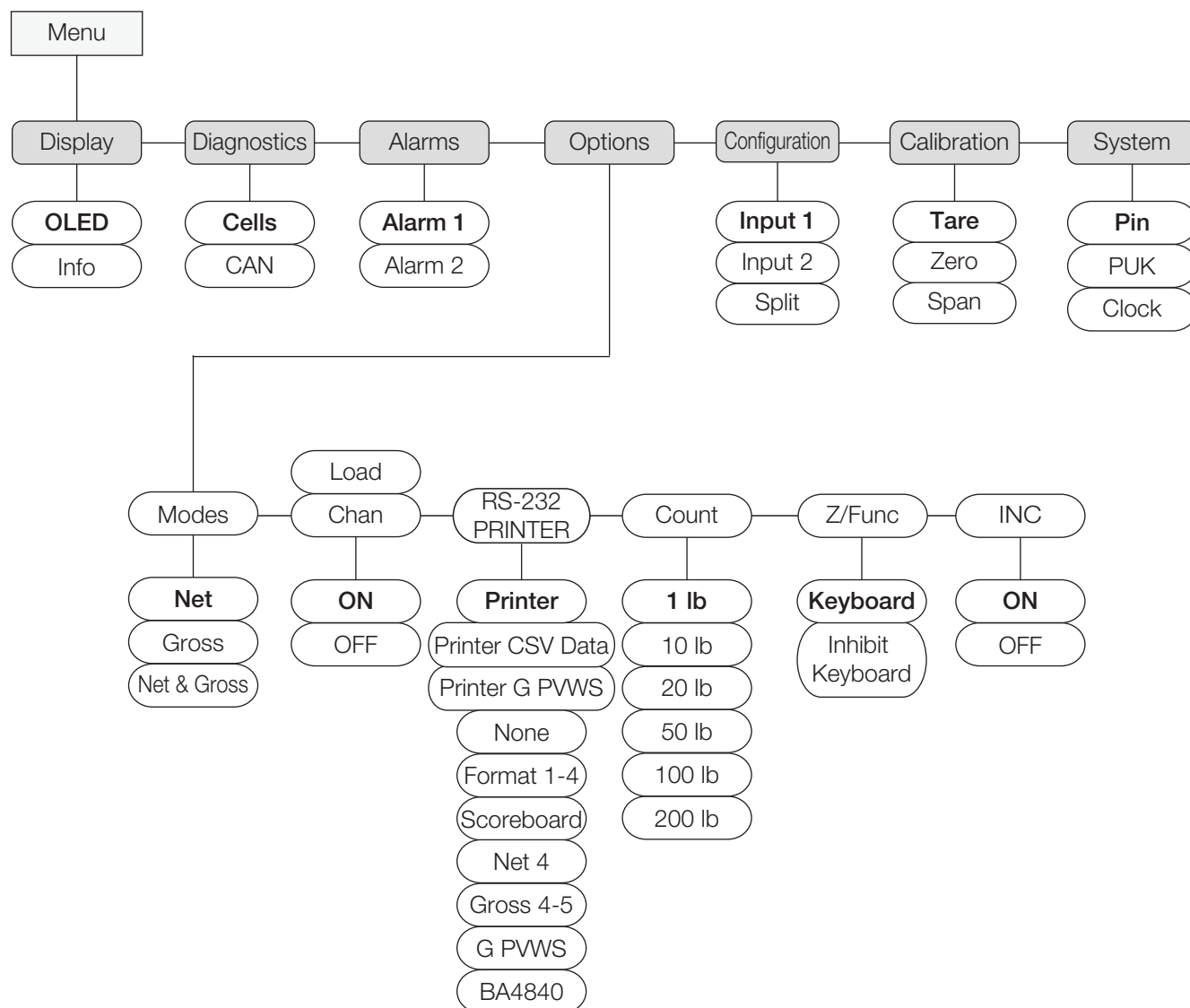


Figure 4-1. User and Setup Menu – Electrical Wiring and Data Connections

User and Setup Menu		
Parameter	Choices	Description
Display	OLED Info	Adjust the brightness of the display; High, Med or Low. Firmware version and serial number display.
Diagnostics	Cells CAN	To display mV/V for load cells or transducers on separate channels. To display CANbus diagnostics (not used).
Alarms	Alarm 1 Alarm 2	Allows configuration of audible alarms.

Table 4-1. User and Setup Menu – Electrical Wiring and Data Connections

User and Setup Menu		
Parameter	Choices	Description
Options	Modes	Select weighing mode to be displayed - Net, Gross or Net & Gross. See Section 4.6.
	Load/Chan	Load function gives the option to accumulate the amount of load (weight) delivered or collected from site. Channel Function - Split screen function is added to the MENU screen.
	RS-232	Select or change RS-232 output option.
	Count	Select count by in kg - 1, 2, 5, 10, 20, 50, 100, 200,
	Z/Func	Allows operator access to Zero/Tare function on the display.
	Inc	For use with roll off systems and dump trucks, turn on to calibrate zero degrees of inclinometer.
Configuration	Input 1(F)	Air/Oil pressure transducer or load cell setting on truck type.
	Input 2 (R)	Air/Oil pressure transducer or load cell setting on truck type.
	Split	Setting varies depending on input 1/input 2 values.
	CAN	Not Used
Calibration	Tare	Entry of empty vehicle weight for gross weight calculation.
	Zero	No load zero calibration.
	Span	Entry of load for span calibration.
System	Pin	Enter a password.
	PUK	Not Used.
	Clock	Change system time and date.

Table 4-1. User and Setup Menu – Electrical Wiring and Data Connections

The following configuration and calibration instructions require symbols to make selections. When selecting a symbol, press the corresponding key below the symbol. See Figure 4-2.

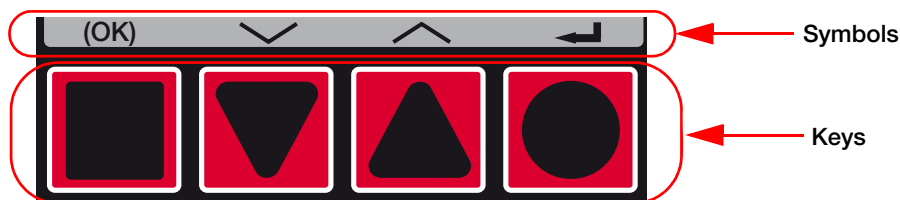


Figure 4-2. Symbol Keys

4.2 Initial Setup of the OB-350 Indicator

The system password allows access modification of the options: Configuration, Calibration and System Setup menus. When in the configuration and setup menus, the function keys will perform the following functions:

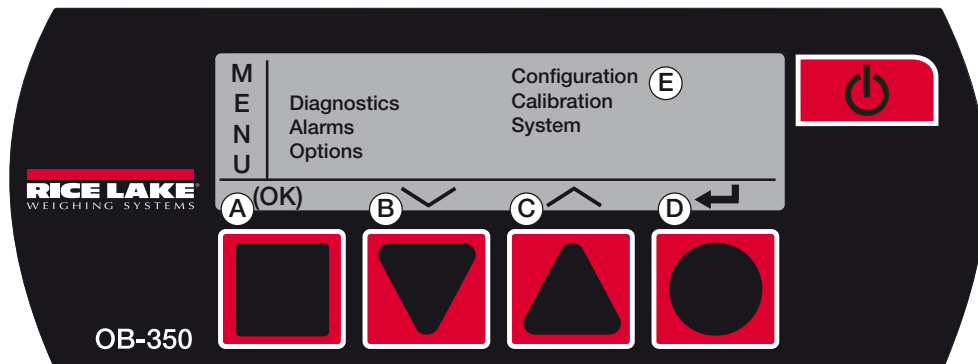


Figure 4-3. Setup Mode

A	Accept or Enter key - enters data
B	Down arrow key - scrolls down within the menu selection
C	Up arrow key - scrolls up within the menu selection
D	Carriage Return/Circle - Previous screen or back function When in a menu function (password) and OK is not visible, use this key as the enter and accept.
E	Selectable MENU options

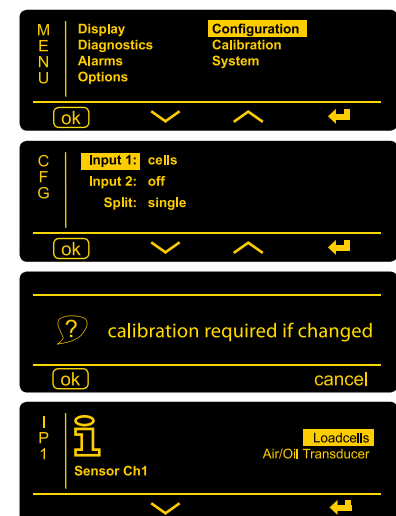
4.2.1 Initial Password Entry and Clock Setup

1. Press the power button to power on the indicator.
2. Press the Circle key to enter the menu screen.
3. Use  or  to scroll to **System**.
4. Press (OK).
5. Press  to select Pin.
6. Press (OK) to display PIN input screen.
7. Enter Password or Pin code, 0 3 5 0, using the following:
 - Press  or  to number 0-9.
 - Press  to move cursor left.
8. When PIN is correct, press  to enter code.
9. Press (OK) to accept PIN.
10. Press  to back up to MENU.
11. To Set PIN, select PIN, press (OK) and repeat 2 - 6.
12. Use  or  to scroll to **Clock**.
13. Press (OK).
14. Select the **edit** key to modify time (military) and date (international)
 - Press  or  to number 0-9.
 - Press  to move cursor left.
15. When complete, press  three times to exit and return to system setup menu



4.2.2 Configuration of Input Channels

1. Scroll to **Configuration**.
2. Press (OK).
3. Press (OK) with **Input 1** selected.
4. Press (OK) again to configure the channel.
5. Use  or  to scroll to **Air/Oil Transducer**.
6. Press .
7. Use  or  to scroll to **Input 2**.
8. Press (OK) again to configure the channel.
9. Use  or  to scroll to load cells.
10. Press  to return to the system setup menu.



4.3 Configuration of Count By

The count by value in the division size, in lbs, that the scale will increment by on the display.

1. Use  or  to scroll to **Option**. Press (OK).
2. Use  or  to scroll to **Count**. Press (OK).
3. Use  or  to scroll to the **Count By** value. Press .

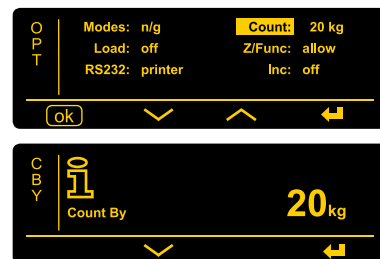
Selectable count by values are 1, 2, 5, 10, 20, 50, 100 and 200 lbs.



Note Rice Lake Weighing Systems recommends using 20 lb minimum. Choosing a lower weight value may cause your weight to fluctuate on the display and returning to zero weight may be more difficult.

Example: If 50lb is selected, the weight values will increase by a factor of 50lbs: 50, 100, 150, etc.

4. Scroll to **Z/Func**: and press (OK).



4.4 Configuration of Zero Function

The Zero function setting allows you to turn on and off the zero key when in normal weighing mode.

Selectable zero function settings are:

- Allow Keypad Zero – Activate container tare (Gross Mode) or Zero (Net Mode) button on main menu to zero load up to 1100 lbs of weight by the operator.

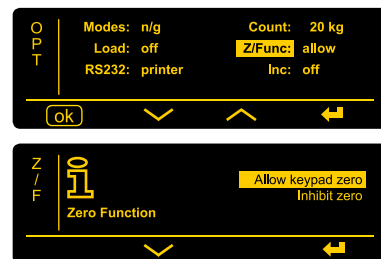


Note When the tare button is pressed in gross mode, the weight will return to the original empty weight tare value.

- Inhibit zero – De-activate operator zero functionality

To set the Zero Function:

1. In **MENU**, select **Options**.
2. Press (OK).
3. In **OPTIONS** menu, select **Z/Func**.
4. Press (OK).
5. Use  or  to scroll to desired option.
6. Press  to confirm setting.
7. Zero is be added to the **MENU** screen.



4.5 Configuration of Inclinometer Calibration

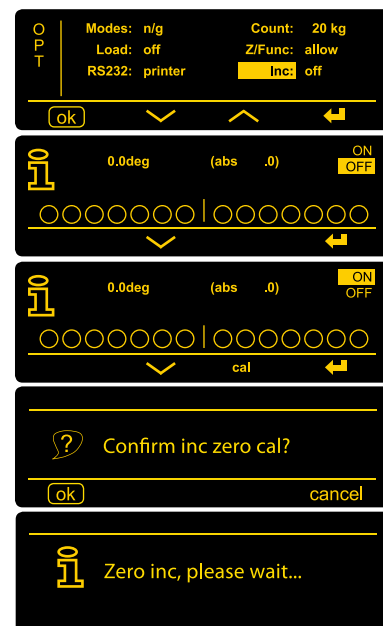
On dump truck and roll off applications, the load runner system uses the load pins and hydraulic pressure transducer to determine a weight value. To achieve the best accuracy, calibrate the system at the same incline that weight will be read, with +/- 1-2°.

The Inclinometer setup screen shows both the body angle in a numeric value and absolute angle (abs 0.0). For this application, use the level indicators, which light up for every degree the body is raised.

The numeric value will indicate a negative value as the body is raised, which is normal. The level indicators to the right will light up, 1° per circle.

The inclinometer function allows visual determination of the height of the body to achieve an accurate weight value consistently.

1. Make sure the truck is on a level surface and the body is in the down position.
2. Scroll to **Option**, press (OK).
3. Scroll to **Inc**, press (OK).
4. Use  to scroll to **ON**.
5. Ensure the body is in the down position and the truck is on a level surface.
6. Press **CAL** to zero the inclinometer.



4.6 Configuration of Modes

With the inclinometer option turned on, the inclinometer screen is visible by switching display screens when pressing the menu button.

The display screen will toggle between the following when configured for:

Gross Mode:

Toggles between gross only weight display, inclinometer standard display and menu mode

Net Mode:

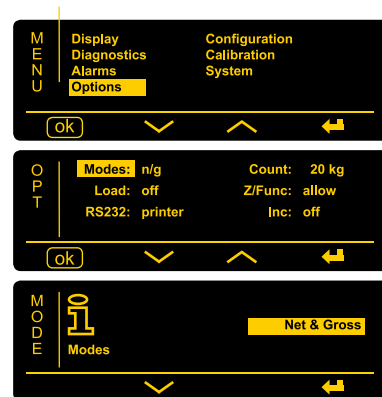
Toggles between net only weight display, inclinometer with net weight display and menu mode

Net and Gross Mode (factory recommended setting):

Toggles between net only weight display, gross only weight display, inclinometer with net weight display and menu mode.

To set mode:

1. In **MENU**, select **Options**.
2. Press (OK).
3. In **OPTIONS** menu, select **Modes**.
4. Press (OK).
5. In **MODES** menu, press  to toggle between
NET & GROSS
GROSS
NET
6. Press  to confirm setting.



4.7 Calibration

Calibration requires the use of a truck scale in order to calibrate the system. First determine the empty vehicle weight or tare weight of the truck. Once the tare and zero calibration are performed, load the vehicle as close to its legal maximum limit as possible to determine the span or net weight value used for calibration.

4.7.1 Calculating the SPAN (Net Weight)

1. To determine actual **TARE** weight, drive the empty vehicle onto a truck scale and note the total weight.

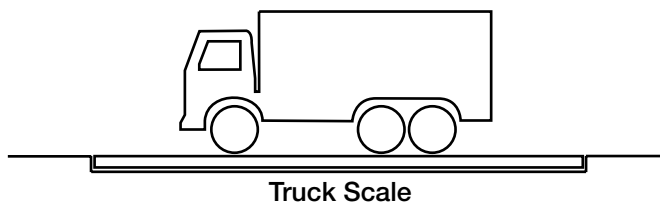


Figure 4-4. Vehicle on Truck Scale

2. Load the vehicle as close to its legal maximum as possible.
3. Weigh the loaded vehicle, using the same truck scale, and record the **GROSS** vehicle weight.
4. Calculate **NET** weight using: $Gross - Tare = Net$.



Note Prior to calibration, with the display in the Inclinometer/Net Weight or Inclinometer mode raise the body clear of the chassis (the factory recommendation is three or four degrees). Record the bubble indication setting for use on span calibration and normal weighing.

4.7.2 Enter Tare Weight

1. Ensure vehicle is empty, then weigh and record TARE (empty vehicle) weight on an accurate truck scale.
2. In **MENU** screen, select **Calibration** and press ok.
3. Select **Tare**.
4. Press **ok** (defaults to 10000).
5. Press **edit**.
6. Enter vehicle TARE (empty) weight recorded in Section 4.7.1.
7. Press **←**.
8. Press **←** again to return to **MENU** screen.



Note Prior to calibration, with the display in the **Inclinometer/Net Weight** or **Inclinometer** mode raise the body clear of the chassis (the factory recommendation is three or four degrees). Record the bubble indication setting for use on span calibration and normal weighing.



4.7.3 Set Zero Calibration

1. Make sure the vehicle is on level ground.
Tippers: raise the body clear of the chassis, approximately three or four degrees.
2. In **CAL** menu, press **↘** to select **Zero**.
3. Press **ok**.
4. Press **cal**.
5. Press **ok** to **Confirm Ch 1 Zero**.
6. Press **←** to return to **CAL** menu.



Note The Rice Lake Roll Off and Dump Truck kits are typically **LIFT-TO-WEIGH KITS**. This means that with the hoist in the relaxed state (on the chassis), no weight reading is available. The hoist needs to be elevated to a position showing the correct angle on the in-cab digital display unit, approximately 4 degrees, for the weight reading degrees to be valid and accurate.

4.7.4 Full Span (Net Load) Calibration

1. Load vehicle to its legal max, record GROSS weight.
2. Weigh and record the TARE (empty) vehicle.
3. Subtract the TARE weight from the GROSS weight to give the SPAN (NET) weight.

$$31900 - 12500 = 19400 \text{ kg SPAN (NET) PAYLOAD}$$

If the vehicle is a tipper, raise the body clear of the chassis.

4. In **CAL** menu, press  to **Span**.
5. Press **ok** (defaults to 22680 lb).
6. Press **edit**.
7. Edit the SPAN (NET) weight, as in steps 1 & 2 above.
8. Press  when done.
9. Press **cal**.
10. Press **ok** to *Confirm Ch 1 Span cal*.
11. Press  twice to return to **MENU** screen.



5.0 Service and Troubleshooting

5.1 System Maintenance

This section of the manual is intended to assist the user with techniques for system maintenance and troubleshooting. Maintenance of the onboard scale can be done quickly and needs to be done at regular intervals.

For service issues make sure you have original test numbers to work with, the test numbers help locate a problem source quickly. Scale meters are built with simple but effective internal system diagnostics programs that isolate component performance.

With reference to onboard scale service and repair procedures that involve load pins, trunnions and air transducers, some fundamental precautions and recommendations must be observed by servicing personnel.



WARNING Failure to observe these recommendations and instructions could result in a hazardous operating condition.

- Servicing personnel must ensure that all vehicle structures are free from cracks, excessive wear, corrosion, alignment problems, etc. that can affect safety and scale performance.
- The instructions outlined herein are designed to ensure that a properly serviced installation will provide maximum safety, optimum system performance and accuracy, for a long operating life. It is therefore extremely necessary that the installer comply with all guidelines and material specifications outlined in this manual, with special emphasis on detail and inspection of work.
- Service and repair work must be in compliance with appropriate regulations of the U.S. Department of Transportation (DOT), state and local regulations, the recommended standards and practices of the Society of Automotive Engineers (SAE), standards of the American Welding Society (AWS), and the recommendations of the truck, trailer and body, hoist and/or suspension manufacturer.

5.2 Calibration

System calibration needs to be performed at the time of original scale installation. Rice Lake Weighing Systems recommends that scale calibration be repeated about one month after original scale installation to adjust for any mechanical influences that "seat" a new scale.

There is no typical interval for scale calibration that can be universally specified. Instead, operators should keep comparison data of onboard scale loads as compared to weights obtained from certified platform scales or pre-measured loads. If this is not possible, six-month re-calibration intervals are recommended. See Section 4.7.

5.3 Sensor Maintenance

5.3.1 Load Pins

For hinge load pins, thorough pin lubrication is critical to proper scale performance. Ensure all load pins used in roll-off and other pin applications are always well-lubricated.

5.3.2 Visual Inspection

At the end of each day, service personnel should perform visual inspections that look for:

- Signs of wear or "polishing"
- Signs of weld cracking or failure
- Evidence of excessive corrosion
- Evidence of potential chassis
- Body runner or support structure cracking or bending

When the load pins were originally installed, instructions specified that mounting brackets required clean, flat, rigid and co-planar surfaces for welding. If these surfaces have become cracked, corroded or out of alignment, then corrective action must be taken to ensure proper performance and safety of the onboard scale installation.

5.4 Cables and Connectors

5.4.1 Cables

Inspect for any loosening of cables that might result in exposure to damage. Repair by adding more cable ties to tighten up the cable run.

5.4.2 Connections

Rice Lake Weighing Systems uses special connectors which do not corrode and can withstand extremely cold conditions. When aluminum connectors are present, especially in environments with high humidity or road salts, the connectors should be periodically cleaned and protected with plumbers tape. If a connector is severely corroded, contact Rice Lake Weighing Systems for replacement information.

Hardware Warranty Statement

Rice Lake Weighing Systems (RLWS) warrants that all RLWS brand equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for two (2) years, unless otherwise stated.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

Upon discovery by Buyer of such non-conformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.

Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, "Protecting Your Components From Static Damage in Shipment," available from RLWS Equipment Return Department.

Examination of such equipment by RLWS confirms that the non-conformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair, or improper testing. RLWS shall be the sole judge of all alleged non-conformities.

Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.

RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways

In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment. Nor will RLWS be liable for the cost of any repairs made by others.

Installer is completely responsible for the design and fitting of the installation, and any changes which might result in voidance of the warranty of the manufacturer of equipment to which the products are installed.

THESE WARRANTIES EXCLUDE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NEITHER RLWS NOR DISTRIBUTOR WILL, IN ANY EVENT, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

RLWS AND BUYER AGREE THAT RLWS' SOLE AND EXCLUSIVE LIABILITY HEREUNDER IS LIMITED TO REPAIR OR REPLACEMENT OF SUCH GOODS. IN ACCEPTING THIS WARRANTY, THE BUYER WAIVES ANY AND ALL OTHER CLAIMS TO WARRANTY.

SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

No terms, conditions, understanding, or agreements purporting to modify the terms of this warranty shall have any legal effect unless made in writing and signed by a corporate officer of RLWS and the Buyer.

© Rice Lake Weighing Systems, Inc. Rice Lake, WI USA. All Rights Reserved.

RICE LAKE WEIGHING SYSTEMS • 230 WEST COLEMAN STREET • RICE LAKE, WISCONSIN 54868 • USA



230 W. Coleman St. • Rice Lake, WI 54868 • USA
U.S. 800-472-6703 • Canada/Mexico 800-321-6703 • International 715-234-9171 • Europe +31 (0) 88 2349171

www.ricelake.com www.ricelake.mx www.ricelake.eu www.ricelake.co.in m.ricelake.com